and angina class (75% class III or IV). While there was less 3 vessel/left main in PTCA patients (56% vs 75%, p < 0.0001), ejection fractions were similar. Comparison of Results and Costs are shown in the table.

The initial advantage of PTCA over redo CABG in terms of mortality, and myocardial infarction was largely lost by 5 years. There were more additional procedures and recurrent angina with PTCA. The initial cost advantage of PTCA may also be lost because of additional procedures. Choice of procedure should be made by careful clinical assessment, as a choice of therapy to minimize cost is unclear and cannot be justified.

802 Calcium Blockers and Other Drug Therapy in Acute Myocardial Infarction

Wednesday, March 27, 1996, 4:00 p.m.–5:00 p.m.
Orange County Convention Center, Room 315

4:00

802-1 Heart Rate-Lowering Calcium Channel Blockers (Diltiazem, Verapamil) Do Not Adversely Affect Long-Term Cardiac Death or Non-Fatal Infarction in Post-Infarction Patients: Data Pooled From 3 Randomized, Placebo-Controlled Clinical Trials of 5,677 Patients

William E. Boden, Franz H. Messerli, Jørgen Fischer Hansen, Kenneth B. Schechtman. *Boston V.A. Medical Center, Boston, MA*

Recent meta-analyses and case-control studies purport to show harm associated with the use of short-acting calcium channel blockers (CCB)—particularly dihydropyridines—in both hypertensive and ischemic patient subsets, and cite the absence of evidence-based medicine regarding long-term safety and efficacy. Reports which impugn CCB use are predicated on retrospective, non-randomized, unblinded data sources with inherent treatment biases, and utilize pooled data of divergent CCB agents which may either increase (dihydropyridines) or decrease (diltiazem/verapamil) heart rate (HR). We performed a post hoc analysis of pooled data obtained from 5,677 post-MI patients randomized to a HR-lowering CCB or placebo (P) in the first and second Danish Verapamil Infarction Trials (DAVIT I: n = 1,436; DAVIT-II: n = 1,775) and the Multicenter Diltiazem Post-Infarction Trial (MDPIT: n = 2,456). During a mean follow-up of 550 ± 376 days, the combined clinical event (cardiac death [CD] or MI) rate was 18% in the CCB group (515/2,827) vs. 20% in the P group (582/2,849), p = 0.018 (Kaplan-Meier comparisons; generalized Wilcoxon test). Actuarial event-free survival (CCB vs P groups, respectively) was 0.89 vs. 0.87 at 6 mo, 0.85 vs. 0.82 at 12 mo, 0.79 vs. 0.77 at 24 mo, and 0.72 vs. 0.69 at 48 mo. After adjusting for relevant covariates (age, gender, diabetes, prior MI, hypertension) using Cox regression analyses, HR-lowering CCBs were associated with significantly reduced CD or MI rates (CCB vs P risk ratio [95% CI] = 0.88 [0 77–0.99], p = 0.035).

Conclusions: 1) HR-lowering CCBs do not increase cardiac events in post-MI pts during long-term follow-up; 2) such pooled data from randomized, double-blind, placebo-controlled trials underscore the importance of differentiating CCB agents which raise or lower heart rate.

4:15

802-2 Long-Term Safety of Calcium Antagonists: Reassessment of the Furberg Hypothesis

Franz H. Messerli, Lionel H. Opie, Richard Chambers. *Ochsner Medical Institutions, New Orleans, LA; Capetown, South Africa*

In a recent meta-analysis, Furberg et al (Circulation, Sept. 1, 1995) have purported to show a dose-related increase in mortality with short-acting nifedipine in patients with acute myocardial infarction. Since there were several misquotation errors (e.g., dose, total number of patients) when compared with the original publications, we recalculated the meta-analysis in two independent statistical centers. Whether a study dealing with stable coronary artery disease (INTACT) should be included in a meta-analysis on unstable angina and acute myocardial infarction is controversial. Hence, we present the data with and without INTACT.

Results were as follows:

Source	Nifedipine deaths/pts	Control deaths/pts	RR (95% CI)	P*
Furberg et al., Circulation	335/4171	274/4183	1.16 (1.01–1.33)	0.01
Furberg et al., recalculated	390/5301	339/5329	1.16 (1.00–1.34)	0.05
Originals (with INTACT)	320/5109	291/5160	1.11 (0.94–1.32)	0.19
Originals (without INTACT)	308/4895	289/4949	1.08 (0.91–1.28)	0.36

*Chi square test for listed proportions for comparison only.

Conclusion: The meta-analysis of Furberg et al is incorrect; there is no overall significant increase in mortality in the nifedipine group compared with the control group. Logistic regression analysis showed neither a group nor a dose relationship to mortality. Although the observed increase in mortality in the nifedipine group was not statistically significant, our data do not dispute the common clinical contention that acute release nifedipine should not be used in acute myocardial infarction.

4:30

802-3 Prognosis of Diabetic Patients After Myocardial Infarction: Effect of Early Treatment With ACE-Inhibitors

Giulio Zuanetti, Roberto Latini, Aldo P. Maggioni, Luigi Santoro, MariaGrazia Franzosi, Gianni Tognoni, on behalf of the GISSI-3 Investigators. *ANMCO and Istituto M. Negri, Italy*

It is recognized that diabetic pts have a higher morbidity and mortality after myocardial infarction (MI). The effect of novel therapeutic strategies including ACE-inhibitors (ACE-i) in these pts is unknown. We analyzed the effect of an early treatment with lisinopril (L) in an unselected population of diabetic pts with acute MI enrolled in the GISSI-3 study. L (5 mg up to 10 mg) was started within 24 hrs from the onset of symptoms. A total of 2790 pts had a history of defined diabetes, with clinical and demographic characteristics balanced between groups of treatment. The 6-week mortality of pts with a history of non-insulin (NIDD) and insulin dependent (IDD) diabetes was markedly reduced by L as shown in the table.

	NIDD		IDD	
	No-L	L	No-L	L
n. of pts	1184	1130	242	254
mortality	10.5%	7.7%	21.1%	11.8%
% reduction	–26.7%		–44.1%	
OR (95% CI)	0.71 (0.54–0.95)		0.51 (0.31–0.81)	

The treatment was associated with an increased incidence of in-hospital persistent hypotension (6.5 vs 4.3% in NIDD, p < 0.05 and 9.1 vs 4.5% in IDD, pNS) and renal dysfunction (3.2 vs 1.4% in NIDD, p < 0.01 and 3.9 vs 1.6% in IDD p Ns), similar to that observed in non-diabetic pts.

In conclusion, (1) in diabetic pts with acute MI early treatment with lisinopril is associated with a markedly reduced 6-week mortality (2) the beneficial effect is evident in both NID and ID diabetes.

If confirmed in other studies, these data would support a widespread and early use of ACE-i in diabetic pts with acute MI.

4:45

802-4 Carvedilol Prevents Remodelling and Improves Prognosis in Patients With Left Ventricular Dysfunction Following Acute Myocardial Infarction

Roxy Senior, Sumit Basu, Avijit Lahiri. *Northwick Park Hospital, Harrow, UK*

Left ventricular (LV) dysfunction following acute myocardial infarction (AMI) affects prognosis adversely possibly due to LV remodelling. Carvedilol (C) is a multiple acting, non-selective β-blocker with additional vasodilatory properties. To assess the role of C on LV remodelling and its effect on prognosis (adverse cardiac events) 49 consecutive patients (pts) with LV ejection fraction < 45% (34 ± 8%, mean ± SD) following AMI were evaluated in a double-blind, randomised, placebo (P) controlled study. Pts received medication immediately following thrombolysis and continued for 6 months during which they were followed up. 2D Echocardiography (Echo) was performed at pre-discharge (V1) (8–10 days) and at 3 months (V2). Parameters evaluated were: LV ejection fraction (LVEF)%, end-systolic (ESV) and end-diastolic volumes (EDV) (mls), wall motion score index (WMSI) and regional (site of infarct) wall motion score (RWMS). Wall motion score was graded from 0 (normal) to 4 (dyskinetic). Analysis of variance was performed.

	ESV		EDV		WMSI		RWMS	
	V1	V2	V1	V2	V1	V2	V1	V2
C	78 ± 22	74 ± 30	121 ± 29	122 ± 34	1.4 ± 0.5	1.0 ± 0.7	12 ± 3	8 ± 4
P	91 ± 32	100 ± 47	137 ± 38	148 ± 54	1.6 ± 0.4	1.4 ± 0.6	13 ± 3	11 ± 5
p value	0.01		0.01		0.03		0.02	

There were significantly less cardiac events (p = 0.04) with C (21%) compared to P (52%). Thus, C prevented LV remodelling and improved prognosis in pts with AMI and LV dysfunction.